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ABSTRACT

A collaborative study group on teacher development of alternative assessments in mathematics and the sciences was cosponsored in the 1992-93 school year by the Virginia Educational Association and the Appalachia Educational Laboratory. Twenty-two teachers from 11 schools throughout Virginia worked with staff from the sponsoring organizations and the state department of education to design and implement alternatives to traditional testing. Findings from the first project year are discussed in the group-developed guide "Alternative Assessments in Math and Science: Moving Toward a Moving Target." Teacher and student interviews and classroom implementation scenes are the focuses of the second year's products, two videotapes with facilitator's guide to assessment development and implementation workshops. Appendixes include: (1) an excerpt from the developed guide (8 tables); (2) the form for reflection and recommendations of study group members; (3) a similar form to evaluate means and discrepancies; and (4) recommendations for implementation and a program description. (Contains 4 references.) (SLD)

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Creating and Implementing Alternative Assessments: Moving Toward a Moving Target

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Creating and Implementing Alternative Assessments: Moving Toward a Moving Target

A. Objectives

Since 1985, the Classroom Instruction program of the Appalachia Educational Laboratory (AEL) has sponsored 31 study groups involving more than 210 teachers, in collaboration with professional teacher associations in its four-state Region (Kentucky, Tennessee, Virginia, and West Virginia). The purpose of each group is to investigate a single educational issue and to develop a product of use to practitioners. More than 30 publications and other products have been developed by these small groups of teachers who use action research, survey, interview, or other qualitative research methodologies. This paper reports on a collaborative study group on teacher development of alternative assessments in math and science that was cosponsored during 1992-93 by the Virginia Education Association (VEA) and AEL with technical assistance and additional financial support from the Virginia Department of Education (VDE) and the National Education Association (NEA). The study group also participated as one of ten state projects in the NEA Consortium on Assessment and Accountability.

From January 1992 through May 1993, 22 teachers from 11 schools in rural, urban, and suburban settings throughout Virginia worked with staff from VEA, AEL, and VDE to design and implement alternatives to traditional testing for their math and science students in grades K-12. Through training, assessment development, peer critiquing, task refining, student use and feedback, and reflection at school and in group meetings, these 11 pairs of teachers grew in knowledge and skills essential to authentically assess what students know and can do. Findings on their first year's experience are discussed in the group-developed guide, Alternative Assessments in Math and Science: Moving Toward a Moving Target. Teacher and student interviews and classroom implementation scenes are the focuses of the second year's products, two videotapes with facilitator's guide to assessment development and implementation workshops.

Objectives of the study were to:

- provide opportunities for teachers to design, implement and evaluate alternatives to traditional testing in their K- 12 math or science classes;
- offer professional development for teachers that encouraged reflection within school pairs, and across school levels and settings in study group meetings;
- collaborate across organizations (VEA, AEL, VDE, and NEA) to realize mutual goals and benefits such as service to teachers, stronger organizational working relationships, and shared knowledge from the study; and
- empower and enable teachers to present findings in presentations at school, district, state, regional, and national meetings and conferences.

B. Perspectives

The restructuring of curriculum and instruction, especially in mathematics and science, currently underway throughout the country calls for a reexamination of assessment practices. Rather than letting assessment drive the curriculum as standardized tests have done in the past, educators are

redefining curriculum in terms of what students need to know and be able to do. While few research studies have examined teacher-developed classroom tests, the work of Stiggins and Conklin (1992) illustrates the need for reform in classroom assessment. Their conclusions, from survey and journal analysis studies, indicate that teachers vary little in the assessments they use, frequently use paper/pencil assessments in math and science, and use tests for summative (grading) rather than formative purposes at higher grade levels.

Several initiatives are underway in Virginia that will assist teachers in changing classroom assessments to enable students "to actively accomplish complex and significant tasks, while bringing to bear prior knowledge, recent learning, and relevant skills to solve realistic or authentic problems" (Herman, Aschbacher, and Winters, 1992, p. 2). While the Virginia Department of Education has replaced its restructuring plan, entitled World Class Education with its central element of the Common Core of Learning, with a focus on Champion Schools with rigorous academic emphasis, plans continue for statewide assessment which will measure demonstrated student learning. The Department of Education continues to fund selected pilot projects designed to assist teachers in the development of alternative assessments for both statewide assessment purposes and classroom assessment. A second AEL-VEA study group, centered upon integrated instruction and alternative assessments and including some original members of the group herein discussed, has received partial funding from the Department.

The 1992-93 study group sought to assist teachers in making the change from traditional testing to alternatives--more authentic assessment forms for classroom purposes--improvement of instruction and assistance to the learners. It was assumed that group training would not only prepare teachers, and their students, for upcoming performance measures on statewide assessments, but teacher development of authentic assessments would more closely align assessment with curriculum and instructional goals.

C. Methods and Techniques

Training; creation, critiquing, and revision of alternative assessments; expert consultation; sharing and discussion of student work; and teacher reflection were critical study group tasks during and between the seven quarterly meetings that occurred from January 1992 through May 1993. Project facilitators, VEA and AEL staff, provided training in the development of classroom-appropriate alternative assessments and recent research findings and journal articles on the implementation of these approaches. Member pairs also compared assessments, student work, and reactions and discussed implementation concerns at their schools; and were assisted by site visits from project facilitators.

The critiquing of member-developed assessments by Ruth Mitchell, author of Testing for Learning: How New Approaches to Evaluation Can Improve American Schools, along with a question-and-answer conference call with her helped members further refine their assessments and rubrics. Further technical assistance was provided by Virginia Department of Education subject area and assessment specialists. Videotaping at study group meetings and during classroom demonstrations of alternative assessments captured insights from teachers and students and provided products from which other teachers may learn. Study group members grew professionally through analyzing and summarizing reflection data and developing sections of their first-year publication. Through their work all 22 assessments included in Alternative Assessments in Math and Science: Moving Toward a Moving Target were field-tested and refined. Also important to teacher professional development was study group member presentation of more than 30 local, regional, and national workshops and sessions.

D. Data Sources

A variety of data was gathered during the project including: teacher-developed assessments, student responses to these assessments, student portfolios, observation notes and student interview data from site visits, and teacher reflections (weekly summary sheets, Reflections and Recommendations forms, data from various group process techniques, audio and videotaped interviews). Each study group member also developed a portfolio with his\her reflections and student feedback on alternative assessments and collected evaluation data from student work.

E. Results and Conclusions

Teacher reflections on assessment changes and on student performance were the data used for analysis of findings in five areas: student achievement, student attitude, instructional practice, working conditions, and teacher effectiveness. These findings are reported in the attached excerpts from Alternative Assessments in Math and Science, Moving Toward a Moving Target (Appendix A). Samples of student work were used by the study group assessment authors and peer reviewers as the basis for assessment revisions. Student work also became portfolio elements for study group members who chose to illustrate student progress resulting from alternative assessments and changes to instruction.

Study group members also completed a "Reflections and Recommendations Form" (see Appendix B) twice during the project (August, 1992 and May, 1993) as formative and summative evaluation. Summarized data for the two administrations and discrepancies between these means are noted in Appendix C for sections I (self rating of assessments developed against criteria discussed by Joan Boykoff Baron [1991] in "Performance Assessment: Blurring the Edges among Assessment, Curriculum, and Instruction" in Champagne, Lovitts, and Callinger (Eds.), This Year in School Science 1990: Assessment in the Service of Instruction), and II (self reporting of the frequency of use of four types [and other] of alternative assessments). Study group members also responded to several open-ended response items in sections III-XII during each administration. These responses illustrate the professional development experienced by group members during the project. Most typical responses from the August and May administrations are provided below.

III. How, if at all, has your attitude toward alternative or performance assessment changed during your involvement with the study group?
August 1992

"My attitude is very positive, but I feel I need continued exposure to make alternative assessments a part of my normal classroom procedures."

"I now know what it is! Also I'm not afraid to try some."

"The study group project has forced me to research or at least investigate the topic a bit now and I have become very excited about the possibilities for use in my classroom."

"A more favorable and knowledgeable attitude has developed. I have a freer attitude toward risk taking in alternative assessment. I am also tremendously humbled knowing that I have just tested the water."

"I have become really excited about the possibilities and am anxious to use alternative assessment effectively this year. I am willing to try new things and learn from my mistakes."

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May 1993

"I have seen that alternative assessment can become a part of the instructional process, if planned ahead."

"It has become much more of an integral part of my teaching, and I recognize the need for it. I am constantly looking for new assessment techniques. There's a lot more I can do!"

"I now know that it works and how to do it. Before, I suspected it would work, but was unsure of how to do it."

"Alternative assessment has become part of the learning process. I view it as a tool to show the total child or whole child. It's a way of putting joys into the rim of learning."

IV. Through your reading, development of assessment tasks, implementation of alternative assessments, evaluation of students, reflection on your own practice, development of a product section, and peer editing of all sections of the document, what have you learned about conducting research?
August 1992

"Plan it out <u>before</u> school starts. Be a researcher <u>in</u> my class/ in my school. Plan for control group. Keep better records."

"(1) A framework is needed; (2) having a partner is extremely valuable; and (3) research generates more questions than answers."

"To be meaningful it should be statistically valid and transferable--that it should be demonstrable that A.A. does work and students 'learn' better."

"Research is time consuming and requires patience and organization. I am continuing to perfect my research skills each day."

May 1993

"There is a tremendous learning curve when learning something new and different. Research must be conducted over a long period of time to allow for reflection and change."

"Research is most valuable when implemented in the classroom settings. The thoughts, feelings and findings of students, teachers and parents are essential to make any research work."

"Good research is time consuming; the collection of samples is one of the most important aspects for credibility for future change and expansion of projects."

V. In what ways, if any, have you found participation in the study group to be professionally rewarding?"
August 1992

"The professional contacts I've made with other teachers have been rewarding because of the sharing we do and the support we give each other."

"I have especially benefitted from all the excellent materials made available to me. It is always rewarding to meet with other teachers and share ideas."

"Involvement in this group has made me think about and look more carefully at what I am doing in my classroom and commit to learning more."

"I found listening to and having discussions with more experienced (teachers) was extremely rewarding. As a third-year teacher, I feel my knowledge base is limited. Yet, the info. I gained from the others is priceless!"

May 1993

"First, meeting with others throughout the state and sharing ideas! Second, I have become aware of and incorporated alternative assessment into my teaching and I have consequently become a more effective educator."

"Participation in this study group has been very rewarding. I have gained so much knowledge and information about this topic but also so many helpful hints from my follow group members. This is the first time I have participated in a published project and am sure that it will help me professionally."

"It has been a tremendous growth opportunity comparable to obtaining a second graduate degree."

"I've been better equipped to provide inservice and technical assistance to regular education and classroom teachers."

VI. What strengths and weaknesses would you identify about the group's work?"
August 1992

"Strengths--we are becoming more proficient in using various kinds of assessment. Each has kept a journal of observations about working of assessment. Teams and group levels have had time to share experiences as well as become comfortable enough with everyone to be open in discussions. All group members have taken task seriously and worked toward a common goal with support for each other."

"Weakness--Not knowing how to evaluate the assessments and the rubrics. Strength--enjoying working together and willingness to share ideas and work cooperatively."

"A strength is the willingness to share; a weakness and a strength is the time we spend sharing stories; call it a necessary stalling event."

"Strength--generally acceptable and receptive to ideas and exchange; Weakness--time, some had ideas which were negative"

May 1993

"Strength-time for sharing, focused on just math and science. Weakness-time away from my classes."

"Have worked together, but could have benefitted by more sharing time of each other's efforts."

"Strengths were present from the beginning because we all share common experiences. We helped and supported each other. The only weakness was that I was not able to visit each person and have them visit me."

"Strength is involvement of different backgrounds! Weakness is time factor."

Questions VII, VIII, and IX related specifically to suggested changes in AEL or VEA assistance to the group and to benefits to VEA or other associations with which the members were affiliated. Since they did not report major findings, response samples were omitted from this paper.

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X. How has or will your school faculty benefit from the study group's work?
August 1992

"Helps faculty members to try things without having to 'reinvent the wheel'. Teachers believe teachers."

"Dissemination of information on alternative assessment; by seeing the use of different teaching techniques."

"I'm hoping that the students will receive the benefits from this study group's work after we get through to the teachers to try this. Don and I are going to conduct a workshop during pre-school sessions."

May 1993

"We have many teachers working on alternative assessments in our school. We have presented to our faculty, lots of interest."

"The county is very interested in alternative assessment and have asked to four participants in this study to be a local resource."

"Mathematics department has movies (videotapes) as we worked. They now have a marvelous library of research materials, the science department has asked me to design a course on A.A. and learning styles/multiple intelligence to support their work in A.A."

"Our group's work will give other teachers and divisions a place to begin looking at the impact of coming changes in education. They need to start now, no later decide. Next year all assessments will be authentic."

Question XI and XII related specifically to dissemination of study group products and information by AEL, VEA, and study group members and to other suggestions for VEA and AEL. Response selections were not provided here since the information does not pertain to major findings.

This summary of responses reflects the growth in professionalism and self-reported knowledge and skills study group members experienced while developing and implementing alternatives to traditional testing. The project facilitators will provide sample member-developed assessments and portfolios along with the group's first publication for review at the presentation. Recommendations for future alternative assessment implementors are included from the group's publication Alternative Assessments in Math and Science: Moving Toward a Moving Target as Appendix D.

Additional conclusions about assisting teachers in the development of alternative assessments or similarly designed projects offered by the project facilitators include the following:

- The pairing of teachers as researchers results in increased communications, assistance, and confidence in sharing with other educators.

- Training in alternative assessment examples and rubrics followed by teacher design and implementation of assessments specific to their classes leads to teacher growth in the process and authentic experiences for students.

- Teacher reflection during a professional development project increases commitment to the experience; awareness of changes in instruction, classroom management, and assessment; and skill in reflection and

communications.

- Voluntary participation by membership application, administrative support, released time, comfortable meeting settings, and focusing on sharing teacher strengths improve teacher commitment to a professional development project.

- Structuring site visits to include interviews with teacher group members, school principals, students, and others involved as well as observations of teacher-designed assessments in action substantiates teacher reports of activities and results, and increases school support for project participation.

- Teacher involvement in data collection, analysis, and reporting, while time consuming, enriches the product and develops research and writing skills.

- Using multiple data collection methods can provide formative and summative evaluation data and involve teachers in project planning and adjustment phases.

F. Educational Importance of the Study, Suggestions for Future Research

Teachers involved as study group members sought to improve assessment practices to more accurately measure student knowledge and skills in ways that emphasize integration, analysis, and application. Throughout the study group experience they found that instructional practices and curriculum as well as assessment and grading were undergoing change as a result of their efforts to assess major understandings. Their experience with design, implementation, and reflection on this classroom intervention has led to the formulation of several suggestions for future action research. These include:

- To what extent do changes to alternative forms of assessment result in improved student learning and achievement?

- Is any one type of alternative assessment (e.g. performance tasks, portfolios, personal communications, products/projects, anecdotal records) more highly correlated with increased student learning or achievement?

- Are certain types of alternative assessments more appropriate for statewide accountability purposes and others more appropriate for classroom assessment purposes?

- Are teachers who develop and implement classroom alternative assessments more likely to continue the practice compared to those who implement assessments developed by others?

- How can teacher action research be fostered given constraints of teacher schedules?

- What changes in teacher education would increase teacher experimentation and involvement in action research as graduates enter teaching?

- What supports are most essential for initiating and sustaining teacher teams collaborating to change curriculum, instruction, and assessment?

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Current study group investigations into the design and implementation of integrated instruction units with alternative assessments may provide responses to some of the above questions. Continuing research will be necessary to determine the most appropriate uses for alternatives to traditional testing. Further study may also prove fruitful to identify effective methods to involve teachers in action research which yields classroom benefits, develops teacher skills as researchers, and contributes to the knowledge base.

Baron, J.B. (1991). Performance assessment: Blurring the edges among assessment, curriculum and instruction. In Champagne, Lovitts, and Callinger (Eds.), This year in school science 1990: Assessment in the service of instruction. Washington, D.C.: American Association for the Advancement of Science.

Herman, J., Aschbacher, P.R. & Winters, L. (1992). A practical guide to alternative assessment. Alexandria, VA: Association for Supervision and Curriculum Development.

Mitchell, R. (1992). Testing for learning: How new approaches to evaluation can improve American schools. New York: Free Press.

Stiggins, R., and Conklin, N. (1992). In teachers' hands: Investigating the practices of classroom assessment. Albany, NY: State University of New York.

FINDINGS OF THE STUDY

This section of *Alternative Assessments in Math and Science: Moving Toward a Moving Target* explores lessons learned in phase one as participating teacher teams reflected on the first year's experiences in their schools. Perceptions of self, partner, peer teachers, principal, and students are described in five subsections: Student Achievement, Student Attitude, Instructional Practice, Working Conditions, and Teacher Effectiveness.

Reflections of the 22 study group members and summaries of major points are explained and supported with stories, quotes, specific examples, and details of classroom experiences. Analysis of weekly logs charting problems and successes, and written reflections to specific questions regarding the implementation of alternative assessments furnished information for this section.

Nearing the end of the project's first year, study group members individually wrote responses to several clarifying questions concerning their perceptions of student achievement and attitude. Then, in reflecting on working conditions, the 22 teachers discussed and wrote about the time factor involved, time-savers developed, administrative support, and the availability of necessary resources. Major points concerning instructional practice centered on how teaching methods changed as alternative assessments were implemented. Teachers analyzed the feedback received on their effectiveness with alternative assessments from students, partners, peers, and principals as they described their own effectiveness.

In developing this section on findings, pairs of study group members analyzed and reported on commonalities found among the responses of their colleagues to each set of questions for the five subsections. Qualitative assessment instruments and weekly summary sheets are included as Appendices E, F, and G of this document. The discussions and reflections in this section provide valuable insights into the actual workings of and interactions produced by more authentic methods of assessing what children know.

Student Achievement

Within this study group on alternative assessment, teachers were asked to answer three questions: "What do I see?," "What can students do?," and "What do students tell me about alternative assessments?" This subsection summarizes their responses in regard to achievement, as well as describing some examples of student work. Additionally, one investigation is discussed that addressed the issue of depth of learning. In this substudy, science students at a high school were assigned to two groups. The test group used alternative assessment activities in addition to traditional tests as part of instructional strategies dealing with a study of plant anatomy. The control group studied the same concept in a more traditional way, which included lecture, films, reading, laboratory activities, field observations, and paper/pencil tests. On a test selected from the publishers' test bank, ostensibly a validated multiple choice test, there was no significant difference between the experimental and control groups' mean performances.

However, a number of study group member observations suggest that further study is needed.

For example, 16 of 22 study group participants reported that "grades improved" when students were using alternative assessment activities in class. It is possible that, as one teacher commented, "Success breeds success." The alternative assessment activities appeared to promote success and higher achievement. This was reflected in performance observed across student ability levels. As one participant noted: "Across the whole range of levels—gifted, average, remedial—I saw improvement. This occurred because I was asking them to **do what they had learned**, not just memorize facts and bits of information they could not tie together." It may be that the improvement of performance and achievement is correlated with the use of alternative assessment. This study group also recognized the possibility of a "Hawthorne effect" resulting from teacher expectations and is conducting further studies to investigate the possibility.

It was commonly observed that group interactions, cooperation on group tasks, oral and written communication performances, organizational skills, and student accountability improved. This occurred most often on alternative assessments which required group work, such as group design of scoring rubrics, reports, laboratory implementations, and mathematical problem-solving. Student self-assessment was commonly incorporated into the assessments; thus, students became more observant of their own progress and interactions. It was observed that they were "communicating with their teachers and peers to explain their work, the choices they made, and how they made their decisions."

Overall, students achieved at high levels of performance according to the rubrics that were designed and distributed as part of the assessments. They appreciated the variety of opportunities, to demonstrate their successes.

Alternative assessment tasks that students completed as part of this study group investigation included the following types of activities and products:

Portfolios—Self selected content

Presentations—In class
To other classes
To community groups

Artwork—Integral to other types of assessment
As a stand alone alternative

Reports—Non-traditional products
Poems and poetic analysis
Short stories

Video reports and interviews

Models—Two and three dimensional

Research projects—For exhibition

Timelines—Integrating disciplines

Computerized telecommunications projects

Games

Student designed test—For other students
For the teacher

Laboratory design projects

Perhaps student successes and subsequent achievement are most clearly demonstrated by these two observations: "The kids started asking if they would get to evaluate groups again," reported one middle school teacher, "They were eager to try future group alternative assessments in an industrial arts exploratory class." Another teacher observed that instead of hearing, "Oh no, a test!" students began to say, "Oh boy, we get to do this for a grade!" The evidence presented later in this section demonstrates a range of products which students completed, working on a variety of levels. Their productivity and subsequent achievement grew with the use of alternative assessment tasks.

Samples and discussions of student works are included here as a means of illustrating the types of activities in this alternative assessment program and as models of student achievement. For portfolio assessment, students in physical science collected demonstration materials that they felt illustrated their progress in the course. Some of the items were teacher selected and others were selected by students. The Table of Contents for the physical science demonstration file (portfolio) is shown in Table 4 on page 13 with a sample of student inclusions (italics).

Table 4
Table of Contents For Science 8 Demonstration File

Biography: Scientist (1)		*Marie Curie*
Article Review (2)		
Best Lab Report (3)		*Changes w/Solutions & Mix* *Flame Tests* *Displacement Reactions*
Favorite Lab Report (3)		*Making Molecules* *Pitch* *Volume of a Baseball*
Interview (1)		
Self-Assessment (2)		*CaCl2 and Temperature*
Peer Assessment (2)		*CaCl2 and Temperature*
Photographs:	Project Topic (1)	
	Creative (1)	
Poems:	Self (3)	*Haikus* *Magnets* *Sonnets*
	Others (3) (with analysis)	*Crime on Mars* *Sonnet to Science*
Science Lab Demonstration (1)		*Using Electricity to Change Acids/Neutrals Into*
Class Evaluation (2)		
Book Report (1)		

Personal selections: Choose five things of your own that can demonstrate what you have learned in science during this course.

Greenhouse Effect paper taught me about environmental issues.
Scientist Identifications taught me about men and women's contributions.
Magnesium report - I learned about an element and its uses.
Biomass report - I learned of an alternative, more environmentally safe type of energy.

Students were also interviewed concerning their selections by members of the team. In the beginning, these interviews were videotaped. However, due to time constraints and equipment acquisition difficulties, the videotaping was dropped from the evaluation of student portfolios. Teachers will keep the portfolios to monitor longitudinal student progress in the next three years. Teachers and students questioned felt that the first year's results were positive.

In another project, students who were studying acids and bases prepared a public presentation for another class which demonstrated their understanding. The rubric for determining success on the

presentation was designed to include evaluations of not only the scientific content of the presentation, but also of the preliminary Virginia Common Core of Learning Skills and of scientific communication skills in the presentation (see Table 5). With the aid of criteria from the English department, public speaking skills were also evaluated. Presentations were videotaped and analyzed with students taking part in the evaluation. On the whole, knowledge of scientific concepts as well as communication skills improved with the active involvement of students in alternative assessment tasks. In measurement activities students were involved in hands-on tasks that required cooperative work with a small group of students. They helped each other to reach the goal of the activity and were responsible for each other's learning. "Excitement grew as they manipulated measurement devices to apply skills in realistic situations." Errors could be corrected and accuracy increased as students worked together—peer or self-assessing for progress against the rubric. "Students learned to solve problems without continual teacher input as they became more responsible for their own learning," read one teacher journal entry.

Table 5
Evaluation Rubric for Sixth-Grade Presentation on Acids, Bases, and Salts

Note: SOL = Virginia Standards of Learning
Rel. = Relationships between disciplines

Ratings: 1 = very weak 2 = weak 3 = average 4 = strong 5 = very strong

A. Standards of Learning (SOL) Program Goals:

Goals	Objectives	Curriculum Guidelines		
II	A	Skill	2 classification	( )
			3 communication	( )
			6 predictions	( )
II	B	Theme	1 change	( )
			3 interrelationship	( )
			6 variations	( )
IV	A	Rel.	3 communication	( )

Program Goal II: The science program should be consistent with the nature of science which includes its philosophy, methods of investigation and verification, conceptual organization, and accumulated knowledge.

Objective A: The science program should emphasize process skills beginning with basic processes at the elementary level and continuing with the integrated skills at higher grade levels.

Objective B: The science program should develop the overall conceptual themes of science.

Program Goal IV: The science program should relate to other curricula areas.

Objective A: Appropriate concepts, processes, values, and skills of other disciplines should be integrated into science.

Table 5 (continued)

B. SOL Content specific objectives for middle and high school levels:

6.1	Acids and bases	( )
6.2	Process skills	( )
6.5	Compound Classification	( )
6.6	Chemical properties	( )
7.1	Process skills	( )
8.1	Process skills	( )
8.5	Chemical properties	( )
8.7	Practical uses	( )
11.1	Equipment handling	( )
11.2	Lab design and experiment.	( )
11.3	Acids, bases, and salts	( )

C. Virginia Common Core of Learning Skills, Working Paper Guidelines and Goals:

Personal Resources

p. 9	Determining what is needed to meet a goal	( )
	Securing the resources to meet a goal	( )
	Planning in order to avoid waste of time	( )

Communication

p. 10	Controlling level of formality for audience	( )
	Understanding ideas and talking about them	( )
	Judging the needs of the audience	( )
	Organizing what to say	( )

Thought

p. 12	Defining appropriate goals	( )
	Developing a workable plan	( )
	Getting appropriate information	( )
	Sequencing information appropriately	( )

D. Narrative Comments

A number of interdisciplinary assessment activities was also used by study group members and their students. In an art/science integration activity the students were to use artistic expression to communicate about the biology of an organism. Writing and illustrating skills came into play for this science task. For a literature/science integration, students used literature skills to communicate information about scientific phenomena in poetic form, and then pulled from their scientific backgrounds to analyze literature selections related to the topic of study. One student's interpretation of Edgar Allen Poe's poem, "Sonnet: To Science," is shown in Table 6 on page 16 with the evaluation rubric. Recognizing that publication is an essential part of scientific communication and that objective peer review is important, student creative works were submitted to the school literary magazine for evaluation by its editor.

Song to Science

We are born into darkness
Our minds void of light
Science can guide us
With its light ray, so bright.

But, Science strips away romance
And blinds us with truth
Imaginations cease to dance
Imaginations stilled by truth.

Vanish? Be gone from here
Stop your attacks on me
I can't stand to live in fear
I want my soul to be free.

Science, what a thief thou art
A predator feasting upon my heart.

by Erin Rebecca Bull

Table 6

Evaluation Rubric for Student Work on Science/ Literature Integration Project

In producing a poetic interpretation of scientific observations or conclusions, the following minimum standards were set:

1. The student should read and be able to discuss the models in class.
2. During the discussion, the student should actively participate.
3. The student should be able to effectively communicate his/her personal interpretation of the work.
4. In production of the student poem the student should:
   a. Use proper rhyme scheme
   b. Use correct metrical style
   c. Use appropriate figurative language
   d. Incorporate correct scientific information
5. For full credit the work must be submitted to an outside evaluator such as the editor of the school literary magazine or other publication of choice.

Excellent—level of work includes all of the above.

Acceptable—level of work is lacking in or weak in only one of the areas described above.

Unacceptable—level of work lacks or is weak in more than one of the above criteria.

In a similar communication skills project at another school, students kept a journal of their observations of plant growth and were encouraged to illustrate their writing in the journals.

Incorporating communication skills and use of the creative arts into content area assessment tasks helped students make connections between their learning and applications of life-long skills for success in other endeavors. One enthusiastic teacher said, "I saw achievement from students who in the past could not pass a single pencil/paper type test in my class. Now that is progress. Some grades have improved because the assessments have been varied and in most cases more exciting and interesting to students." Another teacher commenting on student achievement claimed, "Students doing the alternative activities demonstrated a thinking process not apparent in traditional tests. Problem-solving and questioning techniques, use of previous knowledge and creativity could be demonstrated in one assessment." In another study group member's class, students commented frequently that their level of achievement had improved as demonstrated by higher grades. "Some students spent more time and did more than the activity required when given new and different types of assessment tasks. They now realize that there may be more than one way to answer a question and they use different approaches to solve problems." In this study more students were able to show success with a wider variety of avenues from which to choose for their performance in the assessment activities described here.

In order to assess student performance effectively, teachers and students developed rubrics that described the standards for achievement and included level of performance descriptions, or benchmarks. An example of a device that was used to assess artistic performance from a scientific perspective is shown in Table 7. A student-developed rubric for assessing success in a project for the study of polygons is shown in Table 8.

Table 7
Evaluation Rubric for an Art/Science Activity

1. Work should include representations from each of the kingdoms studied.
2. Specimens should be presented at time of submission.
3. Work should be in at least three different media, one of which must be pen and ink.
4. At least one three-dimensional representation should be included.
5. Work, except for the three-dimensional one, should be mounted and matted.
6. In print, accompanying each work and specimen, collection data should be included containing the following:
   - Collection date
   - Art completion date
   - Collection location
   - One "neat fact" about the specimen
7. Work should be proportionally correct (to scale).
8. Different perspectives should be included (ventral/dorsal).
9. Close up detail of important structures should be included.
10. Scale of evaluation: (Benchmarks)

All of the above criteria met	Excellent
Artistic merit notable, but scientific content lacking	Fair
Poor artistic quality and low scientific content	Poor

Table 8
Polygon Rubric Written by Ninth Grade Resource Math Students

After constructing seven polygons that had been studied with Cuisinere rods, students wrote the following rubric that a judging team could use to assess each student's constructions and the accompanying student explanations.

1. All seven polygons are represented.	7 = good; 5,6 = acceptable; 4 or less = not acceptable
2. Student can correctly identify each of the polygons.	7 = good; 5,6 = acceptable; 4 or less = not acceptable
3. Student can correctly describe sides using terms parallel and perpendicular.	7 = good; 5,6 = acceptable; 4 or less = not acceptable
4. Student constructed angles correctly and communicates the correct descriptions of the angles for each polygon using correct terms (right angle, obtuse angle, acute angle).	7 = good; 5,6 = acceptable; 4 or less = not acceptable

As one teacher reflected, students "could do anything if given clear criteria, examples, and the freedom to develop their own products" within the boundaries of the objectives and rubrics. There appeared to be few limits to how much an ambitious student could achieve, if the standards and levels of performance required were clearly defined and understood. Uncertainty and confusion about objectives and goals for performance were two road blocks removed by alternative assessment tasks.

Student Attitude

Today's educators work with students who often exhibit apathetic or negative attitudes toward learning. Poor attitudes may be attributed to problems students face outside the school environment such as drug abuse, troubled home life, and peer pressure. Educators are searching for new methods to change negative student feelings and actions toward school. This subsection describes how implementing alternative assessment improved student attitudes for this study group. Study group members individually responded in writing to questions such as: "What do I see? What can students do?" "What do students tell me in regard to their attitudes about alternative assessments?"

Analysis of responses revealed that study group members had observed negative attitudes when traditional methods of assessment such as paper/pencil and norm-referenced tests were used. One middle school teacher stated that her students did not consider a traditional paper/pencil test as being something from which to learn; instead, this type of test was perceived as something that was "done to" students. However, when study group members used alternative assessments with product and performance tasks, students expressed excitement and enthusiasm. Some comments that study group members heard from students were: "I like this," "When can we do this again," and "I feel good. For the first time, I did something right and got it in on time. This is fun. It's easy. I like it because I finished my work and it (the assessment) helped me keep up with the work for the portfolio." Many students were pleased that test grades could be earned by doing "something fun."

A high school special education teacher noticed a positive change in one student for whom a project was especially meaningful. This special education student had always been very shy, retiring, and had displayed characteristics of low self-esteem. Her grades were very poor even though she worked diligently. However, once alternative assessment activities were implemented, she began to experience success. With one particular biology project in scientific methodology, she went beyond what was required for the project. On her own, she interviewed an optometrist about contact lenses and did extra reading to formulate questions for the personal interview. The student seemed to become more confident as she worked on a research project that was related to her own visual handicap. An alternative assessment of her understanding of the anatomy of the human eye and the optical nerve was designed using the form in Table 9 on page 19 instead of a traditional paper/pencil test.

The student's success on the research project was evaluated using a modification of guidelines by Giese, et al, (1989), as shown in Table 10 on page 20 and Table 11 on page 21.

"I feel so positive when I see her holding her head up, smiling and going after what she wants," stated her teacher, "Pretty impressive for a girl who tried everything to fade into the woodwork at the beginning of the year."

Judged by the frequency of positive observations by the participants (all reported some form of improvement in student attitude) and the enthusiasm displayed during the study, the utilization of alternative assessments improved student attitudes toward their work. Teachers have reported that, "Students appreciated the opportunity to do alternative assessments." One teacher even reported that students came to him and asked if they could do alternative assessments such as art work, short stories, cartoons, or games, which they had designed themselves, on a biology assignment. In one advanced chemistry class, students who were normally reluctant to participate in group research projects entered into a "flurry of activity," once they could see exactly what was expected of them in the teacher-developed rubric. In another instance,

Table 9
Alternative Assessment Design Sheet for a Science Project for the Visually Impaired Student

I. Prior knowledge or experience required
   A. Scientific reporting
   B. Contact lenses
   C. Eye functioning

II. Concept or objective
   A. The scientific method an library research skills
   B. SOL 10.2 and 10.3

III. Tools and materials
   A. Lenses, ray box, light source
   B. Opticians or optometrist
   C. Literature/interview

IV. Motivation
   A. Academic fair entry
   B. Literature/Science combination
   C. Personal experience

V. Learning activities
   A. Select types
   B. Identify variables
   C. Select independent variables and dependent variables
   D. Conduct an experiment
   E. Report findings

VI. Assessment
   A. Prepare a paper using the Standard High School Science Report Technique on the research done.
   B. Display work in Academic Fair exhibition

VII. Rubric—See Tables 10 & 11, pp. 20-21.

a quiet, reserved student, who seemed to speak out only reluctantly even though she earned mainly A's on traditional tests, blossomed into a highly communicative and creative student when given an opportunity to perform on alternative assessments. Other students "...gleefully worked on their alternative assessment tasks with noticeable enthusiasm and creativity."

A teacher of junior high school students commented, "I see kids saying thank you, sending notes to my aide and me, smiling, asking to do things with less stress and fewer 'I-don't-care attitudes'. Students feel successful. They are anxious to try rather than give up." Students who performed poorly before alternative assessments became more enthusiastic about doing quality work. "They feel they have a bigger part in determining their own grades with alternative assessments" wrote one teacher in her daily reflections. "They put in the extra time to do more extensive projects. Some shared their work with other teachers and students."

Not all students eagerly embraced alternative assessment. A few, often students who were very successful on traditional paper and pencil multiple choice tests, were reluctant to take on the challenge of the more in-depth assessment instruments which were developed for classroom use. In some instances, students with poor organizational skills who lacked practice in long-term project development appeared to have difficulty with alternative assessments, and were reluctant to try more than one. In one instance, when an alternative writing assignment was used in a mathematics class, some students "chose to take the zero" rather than do the assignment. They felt that "writing was not part of math." However, on other alternative assessments, once many of these reluctant students "got going," they not only completed the tasks, but excelled in a number of them.

Study group members also noted a change in student involvement. With alternative assessment, students took pride in their work and were willing to put in the extra effort required. "They showed excitement as they talked among themselves and helped each other in performing alternative assessment tasks," said an elementary teacher. Another teacher responded, "I see more students staying after school, asking more questions, and becoming

Table 10
Criteria for Assessing the Academic Fair Project

Criterion, (Point Value), Description, Score

Title (10): Should be as short as possible but be informative, descriptive, and interesting. _____

Hypothesis (10): Should be clearly stated in a testable way, alternative hypothesis should also be stated. Each should include the level of testing or the statistic used. _____

Independent variable (10): The tested independent variable should be clearly identified in terms of an operational definition. _____

Levels of independent variable (10): All of the tested levels of the independent variable should be identified. _____

Control (10): The control with which the experimental groups are compared should be properly identified. Other constant variables must be considered. _____

Repeated trials (10): An appropriate number of repetitions of the experimental conditions should be observed and the proper statistic for describing the data should be used. _____

Dependent variables (10): The dependent variable should be identified and properly operationally defined. _____

Measures of dependent variables (10): These should be recorded in an appropriate data table, properly labelled, and include appropriate statistics. _____

Experimental design diagram or photograph (10): This must clearly show the setup that was done and the relationships between the materials well enough to be followed by an independent experimenter who would want to repeat the work. _____

Appropriate level of complexity (10): This must be at the instructional level of the students. Tenth graders should not be doing a seventh grade level project. _____

Creativity (10): This is reflected in using a new project or doing an old one from a new and different perspective so that it is obviously unique. _____

Adapted from Giese, et.al. (1989)

more involved during class." As involvement increased, students began to take ownership of their learning. When students participated in the evaluation process, they became more responsible for their work. For example, a fourth grade teacher described a student who previously did only enough work to "get by." He had a very care-free attitude about school and appeared to enjoy showing off. After she implemented alternative assessment, he became involved in his own learning, became

Table 11
Report Specifics

In the report, the student should include all of the following in addition to the above mentioned items.

Background (20): Include a thorough discussion of the topic and include the reason for studying the topic. It should include material from several sources, including a brief discussion of other studies. _____

Materials (10): A complete listing of relevant specialized materials used in the research. Do not include common items that are not specialized for the research such as paper, pencil, books, etc. _____

Procedure (20): Should be complete enough for someone else to read and repeat what was done in the research. _____

Data (10): In the proper table(s). _____

Conclusion/analysis (20): Must include a statement about the acceptance or rejection of the hypothesis and be based upon the data. The analysis section should reflect how the conclusions relate to the background and include possible explanations for the results. _____

General visual presentation effect (20): The use of proper materials in making the display attractive and clearly demonstrating the findings in the presentation. _____

Adapted from Giese, et.al. (1989)

knowledgeable, and began to enjoy school without acting out. This student eventually made the honor roll and other teachers noticed more on-task behavior.

Overall, study group members observed positive attitudes with the use of alternative assessments, yet some members detected negative opinions from some students. A few students displayed frustration when asked to be creative. Students who usually did well on traditional tests did not want to risk trying something new. These children often stated, "Just give me the test." The same students seemed to still buy into the "What-grade-did-I-get?" syndrome, in order to compare grades and compete with others.

However, for most students in study group member classes, using alternative assessments improved student attitudes and increased self-esteem. The alternative assessment projects allowed students to take an active role and to develop pride in their learning as they put it into practice. All members of the study group reported students becoming excited about alternative assessments and more interested in learning. Students were proud of their accomplishments and developed a strong sense of ownership for their products, even exhibiting a mild panic when a portfolio was temporarily misplaced. Students were observed to be more involved in their work, especially those who had not been successful on traditional tests. On the whole, student attitudes toward learning showed improvement as a result of the alternative assessments used in their classrooms. They enjoyed the variety of the alternative assessment activities and the sense of fulfillment or accomplishment acquired from "hitting the target."

Instructional Practice

Instructional practice encompasses the techniques and methods the teacher uses to facilitate learning within the prescribed curriculum. These practices range from traditional teacher-centered lectures to student-directed programs. Study group members were asked two questions in regard to their instructional practices during the implementation phase: "How have your teaching methods changed as you have implemented alternative assessment?" and "What are you doing differently?"

In examining the responses to these questions, it was determined that a majority of the participants agreed on several points. For elementary teachers in particular, no major changes in instructional practices were reported. However, these teachers described becoming more aware of their customary practices and improved in planning and writing rubrics. Teachers began to match their assessment to their instruction rather than allowing the assessment to drive the instruction. Recent related literature suggests that assessments should match not only the objectives for learner outcomes, but the instructional strategies used to teach toward mastery of those objectives as well. Only that which is taught should be tested in a manner consistent with how that concept is taught.

A respondent commented, "As I implemented alternative assessments I saw a decrease in grading stacks of papers each night. Students evaluated their own work along with the teacher and had immediate feedback about strengths and/or weaknesses. Students were allowed to set deadlines for their own mastery and I guided their learning rather than telling them facts they should know. Students were asked for input and helped with the initial planning of assessments. I incorporated more videotaping, photographing, and audio-cassette taping of student performances." Another instructor said, "I am now thinking more about the criteria for successful completion of any demonstration of mastery. I am trying to more clearly let students know what a successful performance or product will be."

Study group members also noted that their instruction became more integrated in nature, with the use of thematic units to incorporate various subject areas and learning strategies. All reported using more hands-on units, a variety of activities, and more open-ended labs and questions to stimulate student involvement and accommodate learning styles. "I look for different ways to assess student achievement, not just pencil/paper tests and grades. There is more variety in my instructional practices and more student facilitated instruction. I involve students in the development of the assessment and in assessing themselves and their peers," wrote one teacher. "We are not talking as much, but letting students assume the responsibility for learning by talking about what they know. We are lessening teacher control resulting in higher noise levels and 'organized confusion' as it may appear to the untrained." "I have tried to provide more hands-on activities that actively engage the students in the use of higher order thinking strategies instead of expecting them to regurgitate facts."

Teachers and students moved away from the exclusive use of adopted textbooks and toward outside resources and trade books. A variety of materials were reported as being used to facilitate learning with more extensive and in-depth projects being assigned. Research on a long-term basis appealed to students on topics of interest to them. One teacher reported that, "We have more open-ended discussions and have moved away from time concerns. I have allowed time for students to do the work necessary to learn rather than just covering the material."

Instruction was described as becoming more student-oriented rather than teacher-driven. Students became more responsible for their own learning. They learned to self-assess, a valuable life-long skill. "I have put more responsibility for learning on my students and have taught them how to use various sources of information. Teaching has included more discovery lessons for students and the use of technology. Assessment uses the same resources." Another teacher summed up instructional practice changes by saying, "I lecture less and advise more. It is difficult, but I am trying to let the students take over more of the class by practicing what they have learned and evaluating their own work against the standards." Members of this study

group reported becoming facilitators of knowledge—"guides on the side, not sages on the stage."

After implementing alternative assessment, and changing some of their teaching methods, teachers had clear ideas about their instructional practices and the teacher's role in the classroom. "Students see me as a helper, a facilitator, a counselor, and a leader who will guide them through the learning process rather than force them through," said one. Others agreed that they became more aware of new practices and more enthused about education. They advised other teachers, "Don't try to fit the new to the old. Cut ties to past ways of assessing."

Student comments after developing an alternative assessment for their high school biology instructor illustrated an appreciation for test making. "I think the best test is one where you test someone else." "I'm really going to get you on this one." "This is hard to do." After all of the work done by students, it took the teacher over five hours to respond to the student-made tests. When a chemistry teacher assigned an experiment as an alternative assessment with the necessary equipment furnished and no instructions, students wanted to know, "How do we do it?" and "What do we do?" The teacher's journal comment at the close of the activity described the end result. "Through collaboration and creative thinking the students did figure out how to perform the experiment which built a great deal of confidence for them."

In conclusion, math and science teachers who have participated in this project over several months described becoming much more aware of their own instructional practices and looking forward to additional work in the field of alternative assessment, especially in refining rubrics.

Working Conditions

Conditions of the teaching environment that enhanced or hindered teacher effectiveness and student performance while using alternative assessment in the study group project were examined. Study group members were asked, "In your school setting, what has helped or hindered your project in relation to the conditions essential for successful implementation: 1) time for learning, sharing, and peer (teacher) assistance; 2) administrative support; and 3) resources for supplies, materials, or equipment?"

Study group members concurred that time is a major factor in student progress toward mastery of objectives. Teachers must plan time for students to work independently, with peers, with the teacher, for learning, for practice, and for evaluation of learning. Individual assessment of student performance required additional time. One study group member wrote that, "There is less time for me to lecture because the students are interacting and quizzing each other. Maybe that is not bad!" Another response indicated that, "It takes a lot of time to work the problems that students make up for the teacher, but it is worth it when I see them checking my answers far more carefully than they would their own work." Students must also make wise use of time in the classroom to benefit from instruction and assessment activities. The group process skills of peer evaluation and cooperative learning are helpful for maximizing use of available time.

Seldom is sufficient time available to teachers for their own or peer sharing and planning, so many arrive at school early, stay late, or do planning at home after school hours. Flexible scheduling and team teaching provided additional planning time for some members of this project. Study group members also needed an abundance of reading and thinking time to process new information about alternative assessments and to produce meaningful activities and rubrics. Time management for teachers and students is a vital key to successful implementation of alternative assessments, and the school administrator plays a vital role in assisting that effort.

On the whole, administrative support in study group members' schools was excellent. Reflections and comments from teachers indicated that principals provided funding and classroom coverage for attending project meetings as school budgets allowed. One typical description of administrative support reported that, "My principal visits and enjoys seeing active learning and student work displayed. Alternative assessment is supported because results correlate directly with pupils' achieve-

ment in relation to objectives." "My principal supports innovative instruction and assessment," reflected another teacher. "The administration is supportive in spirit, but funding is limited as far as additional hands-on materials." It was also suggested that the alternative assessment activities and the learning that resulted made the administrator "look good" and resulted in positive support. Some principals approved additional activities for the classes involved in this study beyond original requirements, arranged for common planning periods, granted professional leave, and provided substitute teachers from school funds. It was noted that principals must agree with the philosophy that all students can learn and perform tasks which demonstrate their learning. Teachers also need support as they help parents understand new methods of assessment. Teachers commented that they do not want to feel that they are "out on a limb by themselves" as they work to improve learning opportunities and assure positive results for their students.

Generally, school district support was perceived as lacking acknowledgement for the work of this group and characterized by some skepticism about the benefit of alternative assessments. However, one study group member felt that the district's central office had been very supportive. Additional awareness activities may improve support from local school district administration.

The availability or allocation of resources varied widely among the 22 participants in this study. Teachers reported that it was necessary to plan assessment around the materials and resources available rather than planning their materials and resources based on the assessment. As one teacher noted, "In alternative assessment, necessity is truly the mother of invention." Teachers often shared materials through cooperative planning and scheduling. Grant and incentive writing were used to obtain materials to support and extend the curriculum. Many teachers used school and community libraries for resource materials.

Study group members often found that they could rely on outside support from community members and parents. For example, a third grade teacher began a unit in math centered around a grocery store theme. When she found she was short on actual manipulatives, she asked her students to bring in one item from home to stock their store. Students brought in many items including personal toys. These items created an authentic activity that the teacher would normally teach for only one week, but because of student interest, the unit stretched into two weeks and incorporated goals for addition, subtraction, multiplication, and using money.

Negative perceptions were voiced in regard to the availability of equipment, supplies, materials, and space. Teaching materials that supported the assessment's objective were often not available. For example, one middle school teacher attempted to use videotaped interviews to evaluate student projects for a science assignment. Difficulties occurred in scheduling the use of the school's only video camera and in securing a quiet and uninterrupted taping location. Another teacher of the primary grades had difficulty finding a variety of tools for measurement (scales, meter sticks, graduated liter containers) to use in providing hands-on experiences. Teachers reported that money was not available for extra equipment and materials to support alternative assessment activities. Supplies and materials were often limited, non-existent, or out of date.

Cost and time may very well put the brakes to the alternative assessment movement. However, reviewing and discussing a portfolio with a child or watching that child perform a task adds a degree of intimacy that is revitalizing in an era characterized by a heavy reliance on depersonalized forms of assessment. One teacher summed up her feelings by saying, "There never seems to be enough time, but by using a rubric I have found I can grade reports and projects faster and more efficiently."

Teacher Effectiveness

Although members of the study group acknowledge that it is early in the project to evaluate the impact of alternative assessment on teacher effectiveness, many have already observed some evidence, both positive and negative. Questions asked for this study were: "What feedback have you

received on your effectiveness from your students? From your partner and other peers? From your principal?" and "How do you feel about your own effectiveness?" One teacher reflected on the ability to measure teacher effectiveness by student feedback: "Student grades and interest are improved by the use of alternative assessments, but is this truly a measure of our effectiveness? Students do not think in terms of teacher effectiveness, only student success. Can we equate these two?"

However, the majority of responses from the study group indicated that student reactions to classroom instruction were viewed by teachers as a reflection of their effectiveness. Therefore, many observations describe how students participating in alternative assessment activities reacted to the instruction. For instance, students who were included in the planning of assessments seemed to appreciate having a part to play in the evaluation process. Comments indicated that they particularly enjoyed the variety that alternative assessments added to the instruction. Alternative assessments were particularly effective for the more creative students. Special education students and their parents seemed especially appreciative of alternative assessment which plays to the strengths of individual students by providing them with a variety of methods to demonstrate mastery. A satisfied teacher commented, "I am thrilled with feedback I have received about using alternative assessments. My students' parents are happy because their children are happy and have become excited about learning and doing homework. I am aware of my effectiveness as a teacher because my students' grades have improved, and they stay on task." Several teachers expressed the belief that the students would retain more knowledge as a result of assessing their strengths instead of requiring conformity to the rigid criteria of traditional paper/pencil tests.

Teachers stated that they felt more effective as a result of being able to meet student needs by addressing various learning styles through the alternative assessments. They also enjoyed seeing the excitement evoked by hands-on activities. One teacher told of how she attempted to teach organizational skills and a linear approach to problem solving. Students had the option of reporting on their projects using photographs instead of written reports. One student had poor verbal ability, but was able to describe in photographs her bird feeder, illustrating effectively how the feeder was set up.

Teacher effectiveness with alternative assessment was affected by other variables. Administrative support can facilitate resource acquisition, planning time, and parent understanding and acceptance—crucial components of successful implementation of alternative assessment. Most administrators were very supportive and quite positive about the idea of using alternative assessment in their schools. However, a few administrators may have been uninformed about the initiative and, therefore, offered little support for implementation.

There were some negative comments heard from students. It was interesting that some of them came from students who performed well on traditional tests. For instance, these students felt that alternative methods only created extra work, were too time consuming, and were too difficult. Although no direct evidence of this was observed, some teachers were concerned that they might be required to defend the new methods to parents and expressed a desire to determine the effectiveness of the new procedures in comparison to traditional testing. However, since different aspects of learning are measured by the two methods of assessments, the use of control groups to experimentally determine the effectiveness of alternative assessment methods was not possible in this study group.

Overall, the teachers in this study group reported that the use of alternative assessment enhanced their effectiveness in teaching for learning, both academically and affectively. Teacher effectiveness was reflected in the observations that student achievement and attitudes improved for the majority of the students involved in the alternative assessment activities. One teacher said, "We are doing a better job of instruction and assessment of progress, but we have a long way to go." Another felt that, "I am still trying to find my way. Alternative assessment has added variety to my teaching methods." Yet another summed it up this way, "I feel that I have affected the effectiveness of my students."

Reflections and Recommendations Form
VEA-AEL-VDE-NEA Alternative Assessment Study Group

August 1992 and May 1993

VEA and AEL staff request your assistance in evaluating services to this study group, improving services for future study groups, and in assessing the impact of study group activities during 1993. Please take a few moments to reflect on each question and provide your response, using the back of sheets if necessary. All responses will be aggregated for analysis and reporting and no identification will be assigned to any statement. Please consider your work during the 1992-93 school year as you respond.

I. Reflecting on the alternative assessments you designed, please rate on the following scale (1-not achieved to 5-achieved by all tasks developed) the extent to which your tasks allowed students to experience the following:

	not achieved				achieved by all tasks developed
A. learn actively rather than passively	1	2	3	4	5
B. tie new learning to what they know and believe	1	2	3	4	5
C. tell a "whole story" with interconnections	1	2	3	4	5
D. talk with others about their understandings	1	2	3	4	5
E. have a clear statement of expectations	1	2	3	4	5
F. realize that knowledge transfers to other situations	1	2	3	4	5
G. tackle problems with apparent relevance to life situations	1	2	3	4	5
H. have some choice in and control over their learning	1	2	3	4	5
I. believe in their ability to achieve	1	2	3	4	5
J. be motivated intrinsically and find personal meaning in the tasks	1	2	3	4	5
K. realize that individual contributions are recognized and valued	1	2	3	4	5
L. take responsibility for their learning	1	2	3	4	5
M. undertake challenging and engaging tasks	1	2	3	4	5
N. permit personal time and resource management to achieve goals	1	2	3	4	5

(adapted from Joan Boykoff Baron. (1991). "Performance assessment: Blurring the edges among assessment, curriculum and instruction." In Champagne, Lovitts, and Callinger (Eds.), <u>This year in school science 1990: Assessment in the service of instruction</u>. Washington, DC: American Association for the Advancement of Science)

II. Rate the frequency of your use of these alternative assessment forms on the following scale (1-not used to 5-used weekly):

	not used				used weekly
A. performance tasks (problems, experiments, demonstrations of skills/concepts)	1	2	3	4	5
B. product oriented (visual display, written or oral reports, charts or graphs, etc.)	1	2	3	4	5
C. portfolio (collection of samples)	1	2	3	4	5
D. personal communication (interviews, conferences with peers, teacher)	1	2	3	4	5

E. other, please describe_____
_____
_____
_____
_____
_____

III. How, if at all, has your attitude toward alternative or performance assessment changed during your involvement with the study group?

The purposes of AEL's study groups are to assist selected educators in learning more about an issue within education using research and development-based information and to produce a quality product of use to practitioners. The following questions ask you to reflect on your involvement as a study group member.

IV. Through your reading, development and refinement of assessment tasks, implementation of alternative assessments, evaluation of student progress, reflection on your own practice, development of a product section, peer editing of all product sections, and videotaping what have you learned about conducting research?

V. In what ways, if any have you found participation in the study group to be professionally rewarding?

VI. What strengths and weaknesses would you identify about the group's work.

VII. AEL's role in study group work is to provide technical assistance, to facilitate the group's work, to produce final print products, and to help disseminate project results. Of the AEL assistance activities you have observed, which would you suggest we continue? How could AEL's assistance to study groups be improved?

VIII. How could VEA's assistance to study groups be improved?

IX. How has or will VEA, NEA, Virginia Department of Education, and/or other professional associations to which you belong benefit from the study group's work?

X. How has or will your school faculty or division benefit from the study group's work?

XI. Dissemination of the products of any study group is important to AEL and VEA. Please suggest ways in which you can share your group's product or the knowledge gained from study group experience with other educators. How might VEA or AEL assist you in doing this?

XII. What other recommendations for VEA or AEL do you have regarding the study group experience.

Thank you for completing and returning this form and enhancing VEA and AEL assistance to future study groups.

Reflections and Recommendations Form
VEA-AEL-VDE-NEA Alternative Assessment Study Group
Means and Discrepancies
August 1992 and May 1993

VEA and AEL staff request your assistance in evaluating services to this study group, improving services for future study groups, and in assessing the impact of study group activities during 1993. Please take a few moments to reflect on each question and provide your response, using the back of sheets if necessary. All responses will be aggregated for analysis and reporting and no identification will be assigned to any statement. **Please consider your work during the 1992-93 school year as you respond.**

I. Reflecting on the alternative assessments you designed, please rate on the following scale (1-not achieved to 5-achieved by all tasks developed) the extent to which your tasks allowed students to experience the following:

	$\bar{X}$ 8/92	$\bar{X}$ 5/93	Discrepancy +/-
Learn actively rather than passively	4.11	4.00	-.11
Tie new learning to what they know and believe	3.64	3.75	+.11
Tell a "whole story" with interconnections	3.29	3.88	+.59
Talk with others about their understandings	3.58	4.06	+.48
Have a clear statement of expectations	3.94	3.88	-.06
Realize that knowledge transfers to other situations	3.35	4.06	+.71
Tackle problems with apparent relevance to life situations	3.35	3.81	+.46
Have some choice in and control over their learning	3.88	3.88	0
Believe in their ability to achieve	3.76	4.13	+.37
Be motivated intrinsically and find personal meaning in tasks	3.76	3.63	-.13
Realize that individual contributions are recognized and valued	3.94	4.31	+.37
Take responsibility for their learning	3.88	4.06	+.18
Undertake challenging and engaging tasks	3.50	4.06	+.56
Permit personal time and resource management to achieve goals	3.43	3.50	+.07

(Adapted from Joan Boykoff Baron. (1991). "Performance assessment: Blurring the edges among assessment, curriculum and instruction." In Champagne, Lovitts, & Callinger (Eds.), This year in school science 1990: Assessment in the service of instruction. Washington, DC: American Association for the Advancement of Science).

Frequency of Use of
Alternative Assessment Forms
August 1992 and May 1993

II. Rate the frequency of your use of these alternative assessment forms on the following scale: **1-not used** to **5-used weekly.**

Alternative Assessment Form	8/92	5/93	+/-
Performance tasks (problems, experiments, demonstrations of skills/concepts)	3.62	3.88	+.26
Product oriented (visual display, written or oral reports, charts or graphs, etc.)	3.41	3.38	-.03
Portfolio (collection of samples)	1.97	3.00	+1.03
Personal communication (interviews, conferences with peers, teachers)	2.88	2.94	+.06

RECOMMENDATIONS FOR IMPLEMENTATION

Study group members used five clarifying questions as prompts for discussion and reflection on alternative assessment. Topics for consideration included building a case for using alternative assessments, listing helpful resources, advising other teachers who are just beginning alternative assessments how to avoid major pitfalls, determining what did not work well, and providing suggestions to help teachers plan over the summer to incorporate alternative assessments into their teaching. Each member recorded responses that were analyzed by a pair of group members for commonalities and major points, then described for this section of *Alternative Assessments in Math and Science: Moving Toward a Moving Target*. The questions are given in Appendix G.

The following 10 recommendations were made by the members of this study group after six months of developing and implementing alternative assessment activities in their classrooms.

1. **Start small**. Follow someone else's example in the beginning, or do one activity in combination with a traditional test.

2. **Develop clear rubrics**. Realize that developing an effective rubric is harder than carrying out the activity. Standards and expectations must be clear. Benchmarks for levels of performance are essential. Characteristics of typical student products and performances may be used to generate performance assessment rubrics and standards for the class.

3. **Expect to use more time at first**. Developing and evaluating alternative assessments and their rubrics requires additional time until you and your students become comfortable with the method.

4. **Adapt existing curriculum**. Plan assessment as you plan instruction, not as an afterthought.

5. **Have a partner**. Sharing ideas and experiences with a colleague is beneficial to teachers and to students.

6. **Make a collection**. Look for examples of alternative assessments or activities that could be modified for your students and keep a file readily accessible. The National Teachers' Assessment Network provides one source of information.

7. **Assign a high value (grade) to the assessment**. Students need to see the experience as being important and worth their time. Make expectations clear in advance.

8. **Expect to learn by trial and error**. Be willing to take risks and learn from mistakes, just as we expect students to do. The best assessments are developed over time and with repeated use.

9. **Try peer assessment activities**. Relieve yourself of some grading responsibilities and in-

crease student evaluation skills and accountability by involving them in administering assessments.

10. **Don't give up.** If the first tries are not as successful as you had hoped, remember, this is new to the students, too. They can help you refine the process. Once you have tried an alternative assessment, reflect and evaluate the activities. Ask yourself some questions. What worked? What needs modification? What would I do differently? Would I use this activity again? How did the students respond? Did the end results justify the time spent? Did students learn from the activity?

Nine specific techniques to try when developing assessment activities are included in the list below.

1. **Group activities** encourage students to work together to develop a plan, carry it out, and communicate their findings to others.

2. **Logs and journals** provide an opportunity to brainstorm, to question, or to reflect on a problem.

3. **Nonroutine problems** involve creative problem-solving, critical thinking, and an innovative approach to the synthesis of ideas.

4. **Open-ended questions** probe students' ability to confront an unusual situation by applying a collection of strategies and ideas. These problems have a variety of correct responses.

5. **Student-generated questions** are formulated and written for other students and the teacher to solve.

6. **Performance tasks** consist of real-world problems that employ useful,meaningful applications for students to tackle.

7. **Portfolios** are collections of student work over time used to how overall improvement/ growth.

8. **Presentations**, single or group, explain ideas and information to others.

9. **Research projects** require students to find information not readily available in the classroom and to draw their own conclusions about implications.

The implementation of alternative assessment will be a growing, learning process for administrators, teachers, parents, and students. Although it may not replace all traditional testing, alternative assessment will strengthen instruction and learning, thereby addressing the issue of accountability in today's schools.

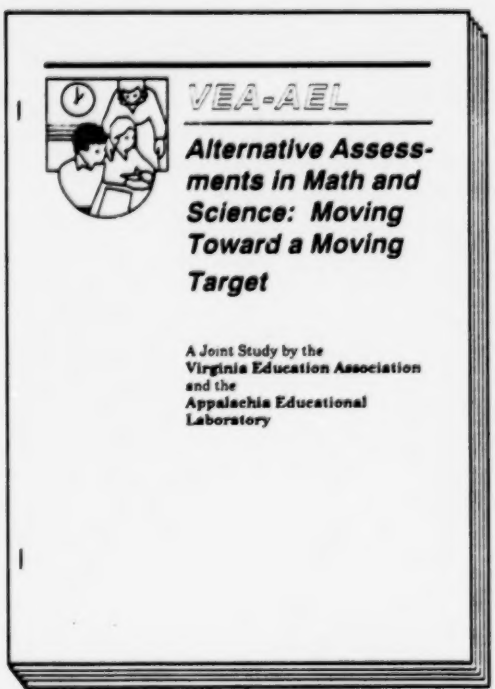
Announcing

Alternative Assessments in Math and Science: Moving Toward a Moving Target

A Joint Study by the
Virginia Education Association
and the
Appalachia Educational Laboratory

How can educators motivate all students to have more positive attitudes and greater involvement in their learning? How can teachers assess all students' progress more realistically and meaningfully?

The restructuring of curriculum, instruction, and even schools currently underway in Virginia and nationwide calls for a reexamination of assessment practices. Instruction and assessment are being redesigned to focus on student demonstration of competence and application of knowledge rather than recollection of facts. **The challenge is to create authentic alternative assessments that mirror real-world situations, encourage teachers to expand the scope of their instructional and assessment strategies, and motivate students to reach high levels of performance.**


VEA-AEL
Alternative Assessments in Math and Science: Moving Toward a Moving Target
A Joint Study by the
Virginia Education Association
and the
Appalachia Educational Laboratory

In a study group cosponsored by the Virginia Education Association, the Appalachia Educational Laboratory, the Virginia Department of Education, and the National Education Association, twenty-two teachers from elementary, middle, and high schools throughout Virginia accepted that challenge and chose to examine and expand their assessment practices. Working as partners, two teachers in each of the project's 11 schools created and implemented assessments that required students to use skills in realistic applications and to reach high levels of achievement through higher order thinking processes and often with the use of collaborative learning strategies. ***Alternative Assessments in Math and Science: Moving Toward a Moving Target*, produced during the study group's first year, includes recommendations from teachers and students who have used alternative (performance) assessments. The effects of alternative or performance assessments on achievement, student attitude, instructional practice, teacher effectiveness, and working conditions are also described. Findings include implementation suggestions and innovative ways to overcome obstacles.** Also provided are a review of related literature, a rationale for the use of alternative assessments, a bibliography, a glossary, and criteria for effective assessments. Twenty-two sample assessments that include objectives, tasks, rubrics, and teacher/student analyses are featured.

If you, your school's faculty, council, school district, or association want to learn more about alternative (performance) assessment or are ready to begin innovative practices that can change instruction and assessment, *Alternative Assessments in Math and Science: Moving Toward a Moving Target* can assist.

To obtain a copy of *Alternative Assessments in Math and Science: Moving Toward a Moving Target* (typeset, 80 pages), contact: Appalachia Educational Laboratory, Resource Center, P.O. Box 1348, Charleston, WV 25325. Payment of $9.00 must accompany your order. VEA members may obtain a copy from Helen Rolfe, Director of Instruction and Professional Development, Virginia Education Association, 116 South Third Street, Richmond, VA 23219; 800/552-9554 or 804/648-5801. For information on training in alternative assessment, contact Karen Simon or Jane Hange, AEL.